# IN THE CLAIMS

The Examiner has indicated that Claims originally numbered from a second occurance of the number 11, through 17 are considered renumbered 12 - 18. Applicant assumes this in the following. Please Cancel Claims 1 - 7, 9, 10 and 11, Amend Claims 8 and 15 - 18, and Allow Claims 8 and 12 - 18. New Claim 19 is added as a combined Original Claim 8 and 11.

1. - 7. (canceled):

8. (presently amended): A method of tracking fabrication of a sample comprising a sequence of high and low "K" dielectric constant layers of materials which each have thickness on the order of less than 100 Angstroms comprising the steps of:

a) fabricating a reference sample which comprises a sequence of high and low "K" dielectric constant layers;

b) obtaining spectroscopic data therefrom as said reference sample is fabricated;

c) fabricating a second sample which is meant to be the same as the reference sample

d) obtaining spectroscopic data therefrom as said second sample is fabricated and in real time detecting differencs said spectra as compared to the corresponding reference sample spectroscopic data; and

e) modifying fabrication parameters to minimize said differences;

in which the spectroscopic data for each of the two samples is derived from ellipsometric PSI and/or DELTA vs. wavelength, and comprises a difference in at least one selection from the group consisting of:

$$N = \cos(2\Psi);$$
$$C = \sin(2\Psi)\cos(\Delta);$$
$$S = \sin(2\Psi)\sin(\Delta);$$

calculated for each of the two samples.

12. (presently amended): A method as in Claim 8 in which the layers of a sample which has a sequence of high and low "K" layers present thereupon includes at least one layer[[s]] comprised of at least one selection from the group consisting of:

$SiO_2$;
SiON;
HfO;
HtO-$SiO_2$.

13. (original): A method as in Claim 8 in which the electromagnetic radiation comprises wavelengths in at least one selection from the group consisting of:

FIR;
IR;
NIR-VIS-NUV;
UV;
DUV; and
VUV.

14. (original): A method for evaluating thickness of an ultrathin film comprising the steps of:

a) providing a system comprising an optically absorbing substrate with a layer of optically transparent material on a surface thereof which is greater than about 250 Angstroms deep;

b) causing a beam of spectroscopic electromagnetic radiation to impinge on said surface of said optically transparent material at an oblique angle, interact with said system and via a detector determining spectroscopic ellipsometic PSI ($\Psi$) and DELTA ($\Delta$), and and therefrom calculating at least one selection from the group consisting of:

$$N_o = \text{Cos}(2\Psi);$$
$$C_o = \text{Sin}(2\Psi)\text{Cos}(\Delta);$$
$$S_o = \text{Sin}(2\Psi)\text{Sin}(\Delta);$$

c) depositing an ultrathin film of absorbing material on a surface of said layer of optically transparent material and again causing a beam of spectroscopic electromagnetic radiation to impinge on said surface of said optically transparent material at an oblique angle, interact with said system and via a detector obtaining spectroscopic ellipsometic PSI ($\Psi$) and DELTA ($\Delta$), and therefrom calculating at least one selection from the group consisting of:

$$N_f = \text{Cos}(2\Psi);$$
$$C_f = \text{Sin}(2\Psi)\text{Cos}(\Delta);$$
$$S_f = \text{Sin}(2\Psi)\text{Sin}(\Delta);$$

d) over a spectroscopic range of wavelengths determining a

parameter vs. wavelength which depends on at least one difference selected from the group consisting of:

$(N_f - N_o)$;
$(C_f - C_o)$; and
$(S_f - S_o)$;

e) using peaks in the parameter determined in step d to evaluate thickness of the ultrathin film.

15. (presently amended): A method for evaluating thickness of an ultrathin film as in Claim ~~13~~ 14, in which the parameter determined in step d is an RMS value calculated from:

$$\sqrt{\frac{(N_f - N_0)^2 + (C_f - C_0)^2 + (S_f - S_0)}{3}}$$

16. (presently amended): A method for evaluating thickness of an ultrathin film as in Claim ~~13~~ 14, in which the depth of the layer of optically transparent material is 1000 Angstroms or greater.

17. (presently amended): A method for evaluating thickness of an ultrathin film as in Claim ~~13~~ 14, in which the depth of the layer of optically transparent material is 1000 Angstroms or greater and in which the parameter determined in step d is an RMS value calculated from:

$$\sqrt{\frac{(N_f - N_0)^2 + (C_f - C_0)^2 + (S_f - S_0)}{3}}$$

18. (presently amended): A method for evaluating thickness of an ultrathin film as in Claim ~~13~~ 14, in which optcal constants of the ultrathin film of absorbing material on a surface of said layer of optically transparent material, are also determined.

19. (new): A method of tracking fabrication of a sample comprising a sequence of high and low "K" dielectric constant layers of materials which each have thickness on the order of less than 100 Angstroms comprising the steps of:

a) fabricating a reference sample which comprises a sequence of high and low "K" dielectric constant layers;

b) obtaining spectroscopic data therefrom as said reference sample is fabricated;

c) fabricating a second sample which is meant to be the same as the reference sample

d) obtaining spectroscopic data therefrom as said second sample is fabricated and in real time detecting differencs said spectra as compared to the corresponding reference sample spectroscopic data; and

e) modifying fabrication parameters to minimize said differences;

in which the spectroscopic data for each of the two samples is derived from ellipsometric PSI and/or DELTA vs. wavelength, and comprises a difference in an RMS value calculated from:

$$\sqrt{\frac{(N_f - N_0)^2 + (C_f - C_0)^2 + (S_f - S_0)}{3}}$$

where:

$$N_f = \mathrm{Cos}(2\Psi);$$
$$C_f = \mathrm{Sin}(2\Psi)\mathrm{Cos}(\Delta);$$
$$S_f = \mathrm{Sin}(2\Psi)\mathrm{Sin}(\Delta);$$

correspond to one of said samples and:

$$N_o = \mathrm{Cos}(2\Psi);$$
$$C_o = \mathrm{Sin}(2\Psi)\mathrm{Cos}(\Delta);$$
$$S_o = \mathrm{Sin}(2\Psi)\mathrm{Sin}(\Delta);$$

corresponds to the second sample.